

## ***REMARKS***

This is a full and timely response to the outstanding final Office Action mailed April 2, 2004. Reconsideration and allowance of the application and presently pending claims 1-65, as amended, are respectfully requested.

### **A. Present Status of Patent Application**

Upon entry of the amendments in this response, claims 1-65 remain pending in the present application. ***No claims are amended herein.***

### **B. Response to Rejection of Claims 1-65 Under 35 U.S.C. §103**

In the Office Action, claims 1-65 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Admitted prior art (Fig. 2) in view of *Sciacero et al.* (U.S. Patent 5,502,391), hereinafter *Sciacero*, or *Arnett et al.* (U.S. Patents 6,186,834 or 6,176,742), hereinafter *Arnett* '834 and *Arnett* '835, respectively, and further in view of *Agazzi et al.* (U.S. Patent 4,669,116), hereinafter *Agazzi*. It is well-established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., *In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

#### **1. Summary of Applicants' Response**

Rejection of the pending claims is based on a proposed combination of allegedly admitted prior art (Fig. 2) in view of *Sciacero*, *Arnett* '834 or *Arnett* '835, and in further view of *Agazzi*. The Office Action uses the allegedly admitted prior art (Fig. 2) in view of *Sciacero*, *Arnett* '834 or *Arnett* '835 to allege that certain limitations of the independent claims are obvious. However, *Agazzi* is required to complete the rejection of all of the elements of the independent claims. The Office Action alleges that:

*Agazzi* teaches a non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3).

It is well established law that if the proposed combination of references teach (either implicitly or explicitly) all limitations of a claim, and if the references are properly combinable, then the claim is properly rejected (see, for example, *In Re Dow Chemical* or *In re Keller*). On the other hand, if the proposed combination fails to teach even one of the claim limitations, a *prima facie* case establishing an obviousness rejection has not been established. Accordingly, the claims at issue are not obvious under proposed combination, and the rejection should be withdrawn. We summarize the law here, because the Office Action apparently fails to appreciate the gravity in its errors made in misconstruing the teachings of *Agazzi*, and the resultant fatal flaw in the rejections of the Final Office Action.

In short, *Agazzi* simply **does not teach, disclose or suggest** “non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)” as alleged in the Office Action. The reasons articulating this failure of *Agazzi* to teach, disclose or suggest the alleged subject matter are detailed hereinbelow. Because *Agazzi* fails to teach, disclose or suggest “non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)” as alleged in the Office Action, the proposed combination of allegedly admitted prior art (Fig. 2) in view of *Sciacero*, *Arnett* ‘834 or *Arnett* ‘835, and in further view of *Agazzi* fails to teach the alleged subject matter (since none of the other cited references teach that subject matter). Therefore, a proper *prima facie* case establishing an obviousness rejection **cannot be established**. Accordingly, the rejection of these claims based upon the misconstrued teachings of *Agazzi* is improper and the rejections should be withdrawn.

## 2. Brief Explanation of Why *Agazzi* Fails to Teach, Disclose or Suggests the Alleged Subject Matter

Applicants went into great detail in their response to the First Office Action explaining precisely why *Agazzi* fails to teach, disclose or suggest “non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in

conjunction with a controller in (see fig. 3)" as alleged in the Office Action. Briefly, stated, *Agazzi* simply does not teach any functionality associated with the symbols apparently representing capacitors that are shown on FIGs. 3 and 10. Applicants' position is that, given the complete absence of *Agazzi* to teach, disclose or suggest any functionality associated with the alleged capacitors shown on *Agazzi* FIGs. 3 and 10, the Final Office Action must improperly infer the necessary functionality of the alleged capacitors to arrive at a conclusion that *Agazzi* teaches, discloses or suggests "non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)."

Applicants assert that other components, not the capacitors, in the *Agazzi* apparatus are used for non-linear cancellation of signals including echo or cross-talk. The Examiner is urged to closely analyze the teachings of *Agazzi* so that he will appreciate that the *Agazzi* capacitors do not themselves perform the "non-linear cancellation of signals including echo or cross-talk."

### 3. *Agazzi* FIG. 3 Fails to Teach, Disclose or Suggest the Alleged Subject Matter

Applicants assert that *Agazzi* FIG. 3 fails to teach, disclose or suggest "non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)."

Apparently, *Agazzi* FIG. 3 illustrates a "capacitive circuit with a plurality of capacitors in parallel" as alleged in the Final Office Action. However, the allegation that the capacitive circuit with a plurality of capacitors in parallel is used for "non-linear cancellation of signals including echo or cross-talk" goes well beyond what is disclosed in FIG. 3 by itself. More is needed to support an allegation that *Agazzi* teaches, discloses or suggests "non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)."

The detailed description of Fig. 3 does not support the allegation of the Final Office Action that the *Agazzi* capacitors illustrated in Fig. 3 are switched by a controller for "non-linear

cancellation of signals ..." The entire text of *Agazzi* regarding FIG. 3 is printed below for the convenience of the Examiner:

An alternative solution to the problem in which the transversal filter summation is done by analog circuitry and thus the adaptation can compensate for the D/A nonlinearity is shown in FIG. 3 and has also been demonstrated. (Details of the above are described in more detail in the cross-referenced application entitled "Echo Canceller Tolerant of Non-Linear Elements", Ser. No. 414,515, filed Sept. 2, 1982.) However, that solution cannot correct other sources of distortion, like pulse asymmetry or saturation in transformers. (Col. 4, lines 17-27.)

As apparent from the text above, there is no teaching to support a conclusion that there is "cancellation of ... cross-talk ... by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)" as alleged by the Final Office Action.

Accordingly, more is needed to support an allegation that *Agazzi* teaches, discloses or suggests "non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by using a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller in (see fig. 3)."

4. Agazzi Col. 1, Lines 17-20 Fails to Teach, Disclose or Suggest the Alleged Subject Matter

Applicants assert that *Agazzi* Col. 1, lines 17-20, fails to teach, disclose or suggest "***non-linear cancellation of signals*** including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) by ***using a capacitive circuit with a plurality of capacitors in parallel*** which can be activated by means of a relay in conjunction with a controller in (see fig. 3)" as alleged in the Final Office Action. For the convenience of the Examiner, *Agazzi* Col. 1, lines 8-26 is shown below so that the limited portion of that paragraph from lines 17-20 may not be taken out of context.

Data echo cancellers have received considerable attention in recent years in connection with digital subscriber loop modems and full-duplex voiceband data modems. With such modems, an inherent two-wire transmission facility is turned into an equivalent four-wire connection by using a hybrid circuit at each end. Data can then be transmitted simultaneously in both directions. However, the attenuation of the hybrid between its two four-wire inputs can be as low as approximately 10 dB. The purpose of an echo canceller is to remove the "near-end cross-talk" or "echo" signal which feeds through the hybrid into the local receiver,

interfering with the data signal coming from a distant transmitter. Since the latter transmitted data signal may be highly attenuated (40 to 50 db), the required attenuation of the echo signal is consequently large (on the order to 50 to 60 db) in order to achieve an acceptable signal-to-echo interference ratio at the receiver input for the maximum expected line attenuation. (Col. 1, lines 8 – 26).

Indeed, *Agazzi* Col. 1, lines 17-20, discloses that “the purpose of an echo canceller is to remove the ‘near-end cross talk’ or ‘echo’ signal ...” However, nowhere is there any disclosure whatsoever in *Agazzi* Col. 1, lines 8-26, that the alleged capacitors of FIG. 3 (or any other capacitors that might be disclosed in *Agazzi*) have a functionality such that “non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) *by using a capacitive circuit with a plurality of capacitors in parallel* which can be activated by means of a relay in conjunction with a controller in (see fig. 3)” as alleged in the Final Office Action. Rather, other components (not the capacitors) in the *Agazzi* apparatus are used for non-linear cancellation of signals including echo or cross-talk.

##### 5. Summary of Why Agazzi Fails to Teach, Disclose or Suggest the Alleged Subject Matter

For the reasons described above, neither *Agazzi* FIG. 3 or *Agazzi* Col. 1, lines 17-20, disclose, teach or suggest that “non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in (see col. 1 lines 17-20) *by using a capacitive circuit with a plurality of capacitors in parallel* which can be activated by means of a relay in conjunction with a controller in (see fig. 3)” as alleged in the Final Office Action. Since neither *Agazzi* FIG. 3 nor Col. 1, lines 17-20 teach the alleged subject matter individually, then when considered in combination, they cannot teach, disclose or suggest “cancellation of ... cross-talk ... *by using* a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller” as alleged.

Accordingly, to reach a conclusion that *Agazzi* FIG. 3 and Col. 1, lines 17-20 teaches, discloses or suggests “cancellation of ... cross-talk ... *by using* a capacitive circuit with a plurality of capacitors in parallel which can be activated by means of a relay in conjunction with a controller” the Final Office Action must necessarily, and improperly, assume facts which are not of record. Such erroneous conclusory positions (based upon assumed facts not of record) taken by

any Office Action provides a clear basis for overturning the improper rejections by the Board of Appeals.

In an effort of complete candor on the part of the Applicants, we considered the *entire* teachings of *Agazzi* to determine if other disclosed subject matter in *Agazzi* might possibly disclose the subject matter as alleged in the Final Office Action. We respectfully refer the Examiner to the Applicants' response to the First Office Action for a clear articulation explaining why other disclosed subject matter of *Agazzi* fails to teach, disclose or suggest "non-linear cancellation of signals including echo or cross-talk in conjunction with data signals in *by using a capacitive circuit with a plurality of capacitors in parallel* which can be activated by means of a relay in conjunction with a controller." For brevity, the arguments described above (in the Applicants' response to the First Office Action) are not repeated herein.

## 6. Rejection of Independent Claims 1, 33, 37, 48 and 62

### a. Independent Claim 1

The proposed combination of Admitted prior art (Fig. 2) in view of *Sciacero, Arnett '834* or *Arnett '835*, in further view of *Agazzi* does not teach, disclose or suggest the feature of a "means for *selectively actuating said compensating means* such that said compensating means, when actuated by said actuating means, reduces an undesirable crosstalk signal caused by a mismatch between a *plurality of mutual capacitive couplings* associated with said plurality of conductors," with the "compensating means *providing capacitance*," (emphasis added) as recited in claim 1. For brevity, the detailed argument for allowability of claim 1 made in the Applicants' response to the First Office Action is not repeated herein, and the Examiner is respectfully referred to the response to the First Office Action. Since a *prima facie* case of obviousness cannot be established because of *Agazzi*'s failure to teach the alleged features of the claim, the rejection should be withdrawn.

### b. Independent Claim 33

The proposed combination of Admitted prior art (Fig. 2) in view of *Sciacero, Arnett '834* or *Arnett '835*, in further view of *Agazzi* does not teach, disclose or suggest the features of a "plurality

of switches, each uniquely coupled to one of said capacitive devices; and a processor controlling said switches, such that when at least one of said switches are actuated by said processor, said corresponding compensating capacitive device is connected between two conductors of a four conductor system, such that said compensating capacitive device reduces an undesirable crosstalk signal caused by a first mismatch between a plurality of mutual capacitive couplings associated with said four conductor system" as recited in claim 33. For brevity, the detailed argument for allowability of claim 33 made in the Applicants' response to the First Office Action is not repeated herein, and the Examiner is respectfully referred to the response to the First Office Action. Since a *prima facie* case of obviousness cannot be established because of Agazzi's failure to teach the alleged features of the claim, the rejection should be withdrawn.

c. Independent Claims 37, 48 and 62

Regarding independent claims 37, 48 and 62, the proposed combination fails to disclose, teach or suggest the feature "wherein said at least one **compensating capacitive group** is selectively connected in parallel with at least one pair of conductors selected from said plurality of parallel conductors, and wherein one of said **at least one compensating capacitive device switches is actuated** such that at least one of said plurality of compensating capacitive devices is switched such that a first mismatch between a plurality of mutual capacitive couplings associated with said plurality of conductors is reduced" (emphasis added) as recited in claim 37. Similarly, the proposed combination fails to disclose, teach or suggest the feature of "connecting a **compensating capacitive device group** to a pair of conductors selected from said plurality of conductors" and "selecting **at least one compensating capacitive device residing in** said compensating capacitive device **group**" (emphasis added) as recited in claim 48. Also, the proposed combination fails to disclose, teach or suggest the feature of "selecting at least one compensating capacitive device residing in a **compensating capacitive device group**" (emphasis added) as recited in claim 62. For brevity, the detailed arguments for allowability of claims 37, 48 and 62 made in the Applicants' response to the First Office Action are not repeated herein, and the Examiner is respectfully referred to the response to the First Office Action. Since a *prima facie* case of obviousness cannot be established because of Agazzi's failure to teach the alleged features of the claim, the rejection should be withdrawn.

## 7. Dependent Claims

Because independent claim 1 is allowable over the cited art of record, dependent claims 2-32 (which depend from independent claim 1) are allowable as a matter of law for at least the reason that the dependent claims 2-32 contain at least all features/elements of independent claim 1. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Accordingly, the rejection to these claims should be withdrawn for at least this reason alone.

Because independent claim 33 is allowable over the cited art of record, dependent claims 34-36 (which depend from independent claim 33) are allowable as a matter of law for at least the reason that the dependent claims 34-36 contain at least all features/elements of independent claim 33. Similarly, because independent claim 37 is allowable over the cited art of record, dependent claims 38-47 (which depend from independent claim 37) are allowable as a matter of law for at least the reason that the dependent claims 38-47 contain at least all features/elements of independent claim 37. Also, because independent claim 48 is allowable over the cited art of record, dependent claims 49-61 (which depend from independent claim 48) are allowable as a matter of law for at least the reason that the dependent claims 49-61 contain at least all features/elements of independent claim 48. Likewise, because independent claim 62 is allowable over the cited art of record, dependent claims 63-65 (which depend from independent claim 62) are allowable as a matter of law for at least the reason that the dependent claims 63-65 contain at least all features/elements of independent claim 62. Accordingly, the rejection to these claims should be withdrawn for at least this reason alone.

## 8. Non-Responsiveness of Final Office Action to Applicants' Arguments

### a. Agazzi Teaches Away from the Embodiments of the Present Invention

In the Applicants' response to the First Office Action, Applicants articulated three reasons why *Agazzi* teaches away from the present invention. However, all claims remain rejected in the Final Office Action under 35 U.S.C. §103(a) using *Agazzi* as a reference, even when the Applicants have demonstrated that *Agazzi* is not properly combinable with the other references cited in the Office Action. For brevity, these arguments made in the Applicants' response to the First Office Action are not repeated herein, and the Examiner is respectfully referred to the response to the First Office Action.

Applicants note that any of these reasons, alone or in combination, clearly demonstrate that one skilled in the art would not look to *Agazzi* for providing capacitive compensation in accordance with the present invention. Accordingly, *Agazzi* cannot be properly combined with the alleged admitted prior art (Fig. 2) in view of *Sciacero*, *Arnett* '834 or *Arnett* '835. Since *Agazzi* is not properly combinable with the references cited in the Office Action, a *prima facie* case establishing an obviousness rejection cannot be established using *Agazzi* as a reference. Accordingly, the claims are not obvious under proposed combination and the rejection should be withdrawn for at least this reason alone.

In the Final Office Action, none of the Applicants' arguments were addressed or even acknowledged. Applicants respectfully point out to the Examiner that any one of these reasons alone are sufficient for the Board of Appeals to overturn a conclusion that *Agazzi* may be properly combined with the other cited references to establish a *prima facie* case of obviousness.

b. Additional Argument for Allowability of Dependent Claims

In the Applicants' response to the First Office Action, Applicants articulated additional reasons for allowability of dependent claims 5, 12, 19, 28, 35, 39, 50, 54, and 58. For brevity, these arguments made in the Applicants' response to the First Office Action are not repeated herein, and the Examiner is respectfully referred to the response to the First Office Action. Applicants note that any of these reasons, alone or in combination, clearly demonstrate allowability over the proposed combination of references. In the Final Office Action, none of the Applicants' arguments were addressed or even acknowledged.